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User Manual

vortex **ATonce-Plus**®

AT-Emulator for AMIGA 500

User Manual

vortex ATonce-Plus

16 Bit 80286 Emulator for Commodore Amiga 500 and Amiga 500-*Plus*

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This manual explains the installation and operation of vortex ATonce-Plus together with an Amiga 500 or Amiga 500-*Plus* computer. When we talk about the Amiga 500 we also mean the Amiga 500-*Plus*.

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vortex ATonce-Plus - Power on Board !
80286 PC/AT-Emulator for the Amiga 500

vortex ATonce-Plus is a high performance AT-Emulator for the Commodore Amiga 500 computer.

ATonce-Plus converts the Amiga 500 into an AT-compatible computer with Multi-processor and Multi-operating-system facilities.

With vortex ATonce-Plus the user has an extensive and fast connection to the "MSDOS world".

*ATonce-Plus is based on the powerful PC/AT Micro-processor, the **16 Bit CMOS 80286 CPU**, which runs at **16MHz** clock frequency. In addition each ATonce-Plus has **512KB vortex FAST-RAM** and a free socket for an optional **80C287-12** arithmetic co-processor.*

*ATonce-Plus offers a **high system performance: Norton SI = 16 .***

The ATonce-Plus Gate-Array, the ATonce-Plus Chip-Level-Emulation and the ATonce-Plus AT-BIOS give the emulator a high PC/AT compatibility.

The compact SMT printed circuit board (SMT = surface mount technology) is inserted directly into the 68000 CPU socket of the Amiga 500 motherboard. The Installation is very simple and solder free!
***Both expansion ports of the Amiga 500** (one on the side and one underneath the computer) **remain free**. Especially the RAM-expansion with realtime clock can stay in the bottom port and is fully supported by the emulator.*

ATonce-Plus can run fully as a Task in the Multitasking-environment of the Amiga 500 Computer.

*ATonce-Plus supports Commodore compatible **hard disk subsystems**. MSDOS can be booted directly from a hard disk partition.*

*In Amiga 500 Computers with 512KB (basic configuration), a full **640KB MSDOS base-memory** is available. In Amiga 500 Computers where more RAM is available (with help from auto-configurating memory expansion), the extra memory is available as **Extended and/or Expanded memory**.*

A summary of the most important features:

- ❑ **PC/AT-Emulator.**
- ❑ **CMOS 80C286-16 CPU**, runs at full **16 MHz** clock frequency.
- ❑ **512KB vortex FAST-RAM**. This special emulator-RAM gives ATonce-Plus a high system performance: **Norton SI = 16 .**
- ❑ Free socket for an optional **80C287-12** arithmetic co-processor. Software like AutoCad, EXCEL, Lotus 123, etc. have a much better arithmetic performance.
- ❑ Highly integrated **vortex CMOS Gate Array**; contents includes an Interrupt-controller and a Memory Management Unit.
- ❑ **Compact SMT printed circuit board with very low power consumption** (CMOS technology).
- ❑ **ATonce-Plus is inserted directly into the 68000-CPU socket.** Simply remove the 68000-CPU from its original socket, plug it into its new socket on the ATonce-Plus and insert ATonce-Plus into the free socket on the A500 motherboard. **The installation is easy and solder-free.**
  The complete installation takes no longer than 15 minutes.
  Both expansion facilities (the expansion bus and the trap-door port) remain free. With ATonce-Plus it is not necessary to remove an already installed trap-door expansion (e.g. 1.8MB RAM expansion) as with other emulators.
- ❑ **AT-compatible BIOS.**
- ❑ ATonce-Plus **offers a full 640KB MSDOS base-memory, without requiring an additional RAM expansion** (an A500 with 512KB is enough).
  If more memory is available (with an auto-configurating RAM expansion), this extra memory can be used as Extended- and/or Expanded-Memory. (e.g. as a RAM-Disk or as program memory for Windows 3.0 running in Protected Mode).

- **ATonce-Plus runs unrestrictedly in the Protected Mode.** WINDOWS 3.0 is fully supported and uses all Extended Memory as real program-memory.

- ATonce-Plus emulates the following video-adapters: **EGA- and VGA-monochrome graphics**, CGA with full 16 colours, Hercules, Olivetti and Toshiba 3100. The Amiga-blitter is fully utilized for the video-emulation. ATonce-Plus supports "Flicker-Fixer" boards (e.g. "Flicker-free video" from ICD Corporation).

- **Multitasking operation**. ATonce-Plus runs as a process within the multitasking-operating system of the Amiga 500 computer. It is possible to switch between MSDOS and AmigaDOS at any time - **both operating systems are running simultaneously !**

- **Complete integration of the internal 3.5" Floppy disk drive** as a 720KB MSDOS Floppy disk drive. External 3.5" and 5.25" Floppy disk drives are also supported.

- The **Amiga Mouse** is available under MSDOS **as a serial Microsoft Mouse** (selectable on COM1 or on COM2.)

- The **parallel interface** becomes **LPT1** under MSDOS.

- The **serial interface** can be selected as COM1 or as COM2 (depending on the mouse configuration).

- **ATonce-Plus supports** Commodore compatible **hard disk subsystems**, that use an AmigaDOS-compatible hard disk driver. Up to 24 partitions can be used under MSDOS. With MSDOS-versions 3.3 or older the maximum partition size is 32MB. With MSDOS 4.01 or higher the maximum partition size is only dependent on the complete physical capacity of the hard disk. **MSDOS can be bootet directly from a partition.**

- Most efficient use of the Amiga hardware.

- **ATonce-Plus emulates the Sound of an PC/AT.**

- ATonce-Plus supports the Amiga **real time clock and the CMOS RAM.**

- Runs with all **MSDOS-versions from 3.2 up to 5.0, as well as DR-DOS 5.0 & 6.0** .

- Part of the delivery of ATonce-Plus is this user manual with a detailed description of the hardware and software installation of ATonce-Plus. Two floppy disks, the System-Disk and the DOS-Utility Disk, contain all software necessary to install and operate ATonce-Plus (except MSDOS).

- **vortex Update-Service.** To make sure the user has the latest version of the emulation software available we offer a complete update service. Every customer that returns the fully completed Business Reply Card to us becomes a registered vortex ATonce-Plus user and will be automatically informed about all new software versions. Send an empty 3.5" disk with a stamped addressed envelope to your local distributor (or directly to us), and you will receive the update without any further costs.

vortex ATonce-Plus - Power on Board !

1.1 Copyrights and Registered Designs

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All programs/software on the enclosed system disk(s) are protected by copyright:

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Other trademarks of manufacturers mentioned in this manual are protected by copyright.

The "FAST-RAM" Technology is an unique method that has been developed by vortex. It is protected by a Legal Registered Design at the "Deutsche Patentamt".

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1.2 General Information

vortex guarantees that on leaving the premises of vortex the product is in a faultless condition and is manufactured according to the product specifications. No further guarantee is given.
vortex does not take responsibility where the suitability of the product for certain applications is concerned. In particular vortex does not take responsibility for the loss and/or destruction of data and programs used in connection to this product.
If there are already other expansion cards fitted in the Amiga 500 computer that are not produced by Commodore or vortex (RAM-expansion, graphic card, CPU-card, etc.) the correct functioning of the ATonce-Plus can only be guaranteed if this is explicitly confirmed by vortex.

To build the ATonce-Plus into the computer the computer case must be opened. This may cause the loss of any warranty claims for the computer.

The ATonce-Plus should be installed by vortex or an authorised vortex distributor. Pre-condition for the safe installation is an antistatic work place (earthed mat on the table with wrist-bands connected to an earth). vortex does not take responsibility for damages that occur through inexpert installation.

This manual contains all the information available at the time it was written. Errors and/or incomplete information is possible. We are grateful for any ideas or suggestions for improvement. Additional information may be found in the file **"README.GBR"** on the enclosed system disk. Apart from up-to-date information this file also contains a list of all programs on the vortex ATonce-Plus disks.

The contents of the file README.GBR must be read before the ATonce-Plus is used for the first time. Output on printer or screen is possible.

This manual explains the installation and operation of vortex ATonce-Plus together with an Amiga 500 or Amiga 500-*Plus* computer. For information about the use of the Amiga computer(s) and its operating system(s) please refer to the relevant system manuals.

ATonce-Plus needs an Amiga 500 computer with 512KB RAM and at least KickStart 1.2.

1.3 Before the Installation

1.3.1 Unpacking the ATonce-Plus Emulator

Open the show carton and take out the ATonce-Plus which is inside the antistatic bag, the user manual, the user reply card (last page of the user manual) and the two ATonce-Plus disks.

WARNING: Never take the ATonce-Plus PCB out of the antistatic bag unless this is done on an antistatic work place and the person taking the ATonce-Plus out is secured against electrostatical charge through wrist bands. If these instructions are not observed the user risks that the CMOS-components on the ATonce-Plus are damaged or destroyed.

Store the show carton safely in a dry place.

1.3.2 Delivery

The following items are parts of delivery of ATonce-Plus:

1. vortex ATonce-Plus PCB in a sealed antistatic bag.
2. Two 3.5" ATonce-Plus disks with emulation- and installation software (no MSDOS).
   ATonce-Plus "System-Disk" (Amiga format: 880KB)
   ATonce-Plus "DOS-Utility Disk" (MSDOS format: 720KB)
3. This manual and the user reply card.

If one of these articles is missing, please contact your dealer.

1.3.3 Contents of the ATonce-Plus System Disk

A list of the files that are part of the delivery of ATonce-Plus can be found in the file README.GBR on the enclosed ATonce-Plus **"System-Disk"** (Amiga format: 880KB). The contents of this file can be viewed on screen or printed out on your printer. You should not use the ATonce-Plus disks as your work disks. With help of the Amiga program DISKCOPY or the Workbench option DUPLICATE a working copy of the ATonce-Plus System-Disk should be made. A copy of the ATonce-Plus **DOS-Utility Disk** (MSDOS format: 720KB) can be produced by means of the MSDOS command DISKCOPY. Store your original ATonce-Plus disks in a safe dry place.

1.3.4 Before the first Operation

In order to avoid improper use or treatment this user manual **must** be read before the ATonce-Plus is installed into your Amiga 500 and put into operation for the first time.

1.3.5 Check the vortex Production Seal

Before the ATonce-Plus leaves our works it is packed and sealed into an antistatic bag. This gives the customer the security that the product is absolutely new and has not been taken out of the bag or used by another person and was possibly damaged by electrostatic charge.

1.3.6 Fill out and send off the vortex User Reply Card

We recommend you fully fill out this card, put a stamp on it and send it to us as soon as possible (you will find the ATonce-Plus serial number on the soldering side of the ATonce-Plus PCB and on the show carton).

When the fully filled out Reply Card is received by us you become a registered vortex-user, and will be informed about new releases and up-dates.
The sequence of events when a new ATonce-Plus Software version is available:

1. We inform the registered customer that a new ATonce-Plus softwa - version is available.
2. The customer sends us a self-addressed-**stamped** envelope and a 3.5" floppy disk.
3. The customer receives the latest ATonce-Plus software-version **without any further costs** (unless you wish to make a small contribution to our coffee fund).

This is of course only possible if the User Reply Card is filled out and sent to us. How else can we know who owns an ATonce-Plus.

2. Installing the ATonce-Plus

The following information explains the installation of the ATonce-Plus emulator in an Amiga 500 computer.

2.1 Important Notes about the Use and Installation.

The installation must take place on an antistatic work place with an earthed mat and wrist bands.

The person executing the installation must have experience in handling CMOS-components.

Never take the ATonce-Plus PCB out of the antistatic bag and install it unless you are working on a antistatic work place and are earthed through the wrist bands.

If these instructions are not observed the user risks that the CMOS-components on the ATonce-Plus are damaged or destroyed.

2.2 Necessary Tools

1. Medium size Posi-drive (Philips) screwdriver
2. Medium size Flat-head screwdriver
3. Medium size Flat-nosed pliers
4. Antistatic work place connected to an earth (wrist-bands).

2.3 How to do it ...

1. Remove all cables from the Amiga 500 and place the computer upside down onto the antistatic work place. Remove the screws in the case using the Posi-drive screwdriver (see picture 2.3.a).
   Place the screws in a safe place.

2. Once again turn over the computer so that it is the right way up (as in normal use). Remove the top part of the case from the bottom part as in picture 2.3.b. Place the top part in a safe place.

3. Before removing the keyboard cable make a note of how the cable is connected, as this cable can be connected the wrong way when you build the computer back together. We recommend you use a permanent marker pen, make a mark on the cable and also on the metal shielding. Now remove the keyboard cable and the keyboard from the computer as shown in picture 2.3.c and place them in a safe place.

4. Straighten out the tabs of the metal shield using the flat-nose pliers and take out the screws that hold the shield in place. Remove the shield as shown in picture 2.3.d and place it in a safe place. Be careful not to cut yourself on the sharp edges.

5. Now the Amiga is in the same position as in normal use. On the left side find the large 64 pin (2*32 pin) chip, the 68000 CPU, the "heart" of the computer. Gently remove the CPU from the socket using the flat-head screwdriver as shown in picture 2.3.e. The CPU is needed in the next step of the ATonce-Plus installation where it is plugged in its new socket on the ATonce-Plus emulator PCB.
   It is possible that a special capacitor on the Amiga 500 motherboard has to be bent aside a little in order to avoid contact between its housing and the soldering side of the ATonce-Plus PCB.

6. Take the ATonce-Plus out of the antistatic bag.
   Also remove the antistatic mat from the bottom of the ATonce-Plus, and insert the ATonce-Plus into the empty socket (where the 68000 CPU was fitted). See picture 2.3.f. Do not touch any of the pins on the ATonce-Plus and make sure all of the pins slide into the socket smoothly. With slight pressure push the ATonce-Plus into the socket.

7. Now take the 68000 CPU that was removed in step 5 and plug it into the socket on the ATonce-Plus PCB. Take special care that the CPU is plugged-in in the right direction ("nose" towards the front, as it was plugged-in on its original socket on the Amiga 500 motherboard). See picture 2.3.g .

8. Before building the Amiga back together a short test to see if the installation was successful will be carried out. Replace the keyboard into its proper position and re-connect the cable, making sure it is connected the right way around (use the marking as a guide). Re-connect all other cables and insert a copy of the ATonce-Plus System-Disk into floppy drive DF0: . Switch on the computer.

   After reading the README-file the Workbench appears. Change to the AT-EMULATOR drawer and double click the ATONCE icon. After a short time the Amiga 500 will reset automatically, the ATonce-Plus load-message will be shown and you are prompted for a MSDOS system-disk. ATonce-Plus works !
   Now eject the ATonce-Plus System-Disk, switch off the power supply and remove all cables.
   If you want to upgrade your ATonce-Plus with an 80C287-12 arithmetic co-processor (vortex order-number: 8361) you should now read chapter 2.4 of this manual before building back together your Amiga 500.
   When re-assembling the Amiga you should make sure that there is **NO** contact between the metal shield and the ATonce-Plus or between ATonce-Plus and the components of the Amiga 500 motherboard. (If in doubt use insulation tape).

   Continue reading chapter 3 of this manual.

If after being switched on the Amiga 500 does not start, switch it off immediately. Remove all cables and the keyboard. Now answer the following questions:

(1) Is the power supply connected correctly ?

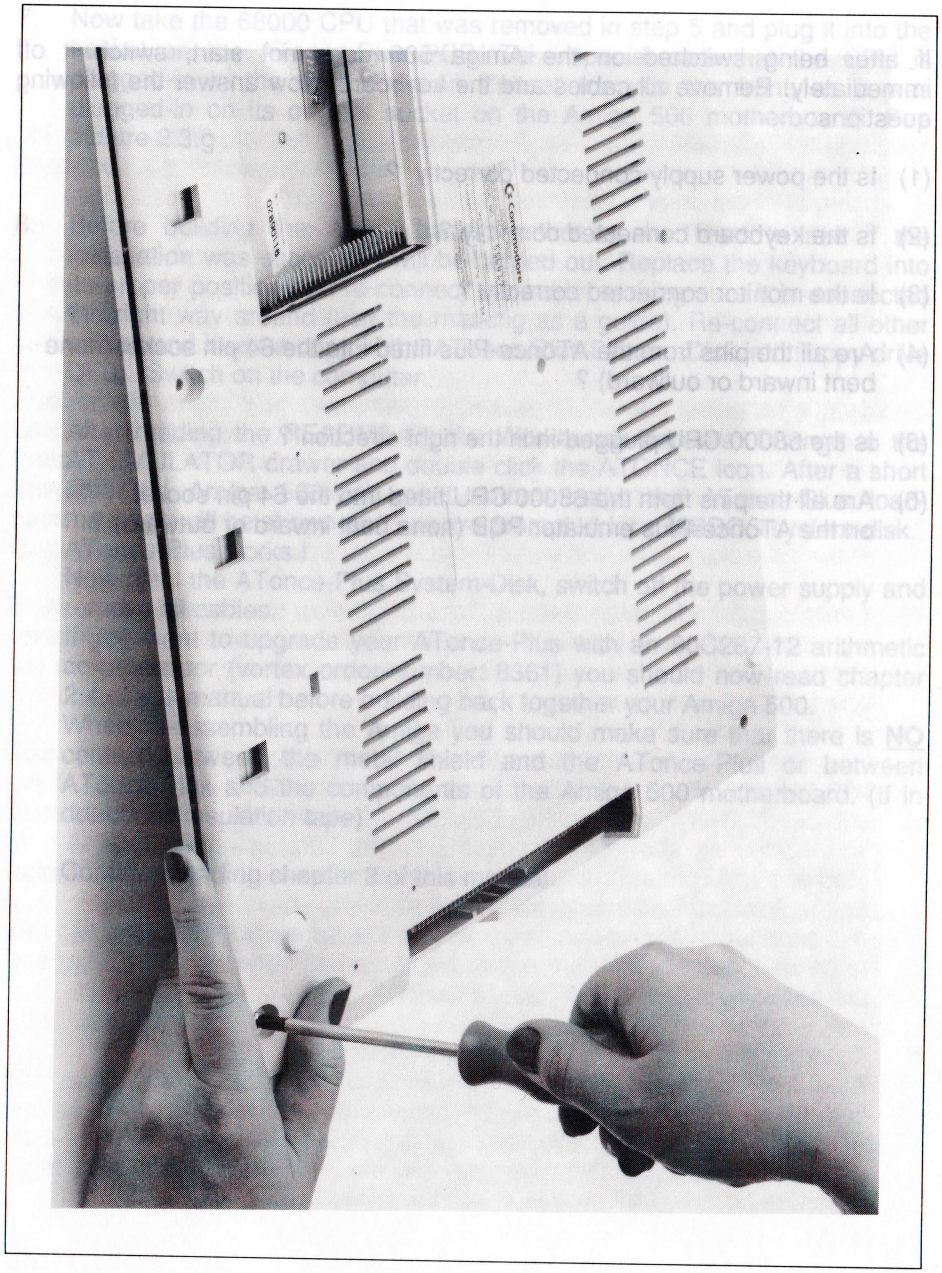
(2) Is the keyboard connected correctly ?

(3) Is the monitor connected correctly ?

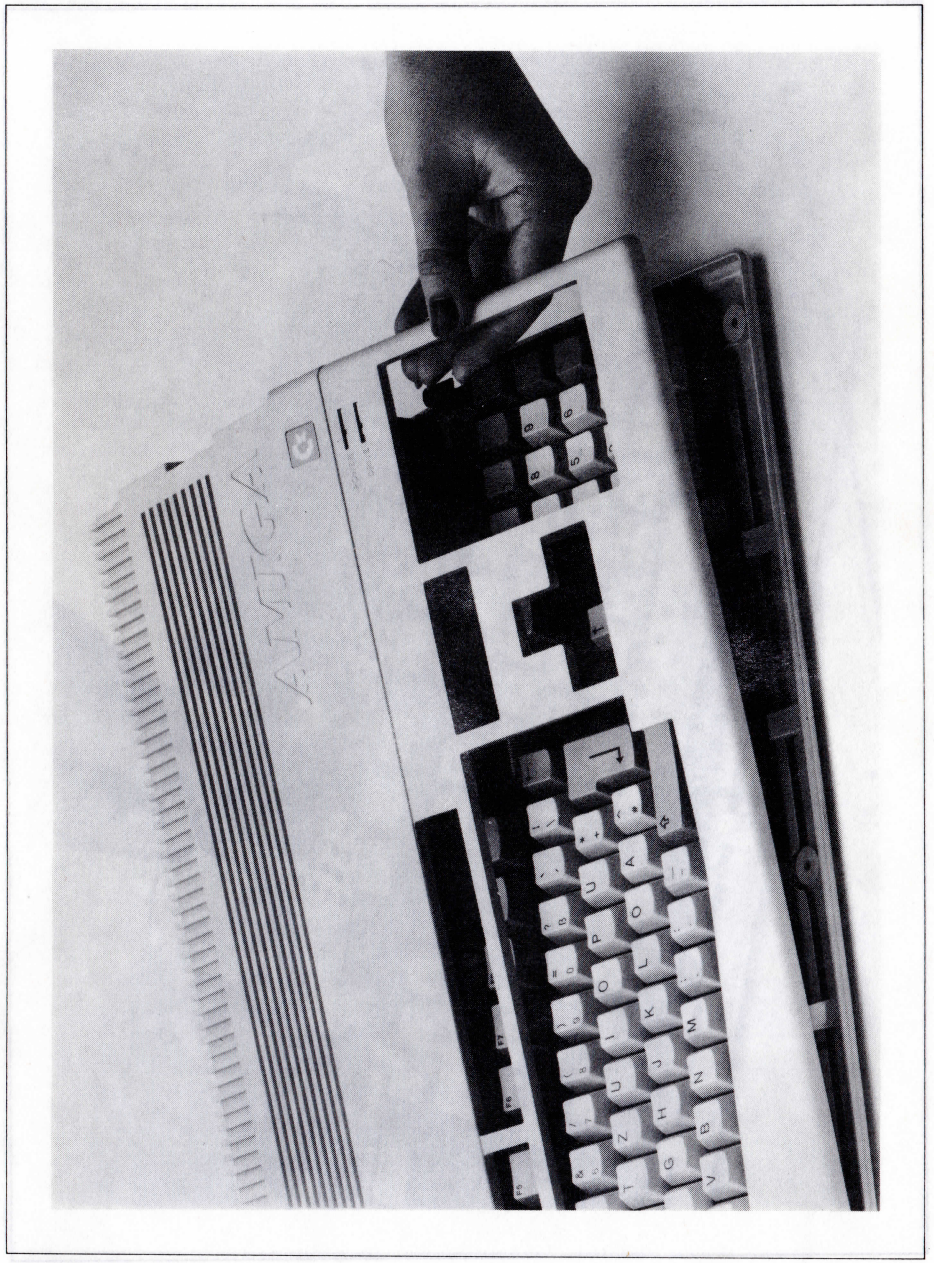
(4) Are all the pins from the ATonce-Plus fitted into the 64 pin socket (none bent inward or outward) ?

(5) Is the 68000 CPU plugged-in in the right direction ?

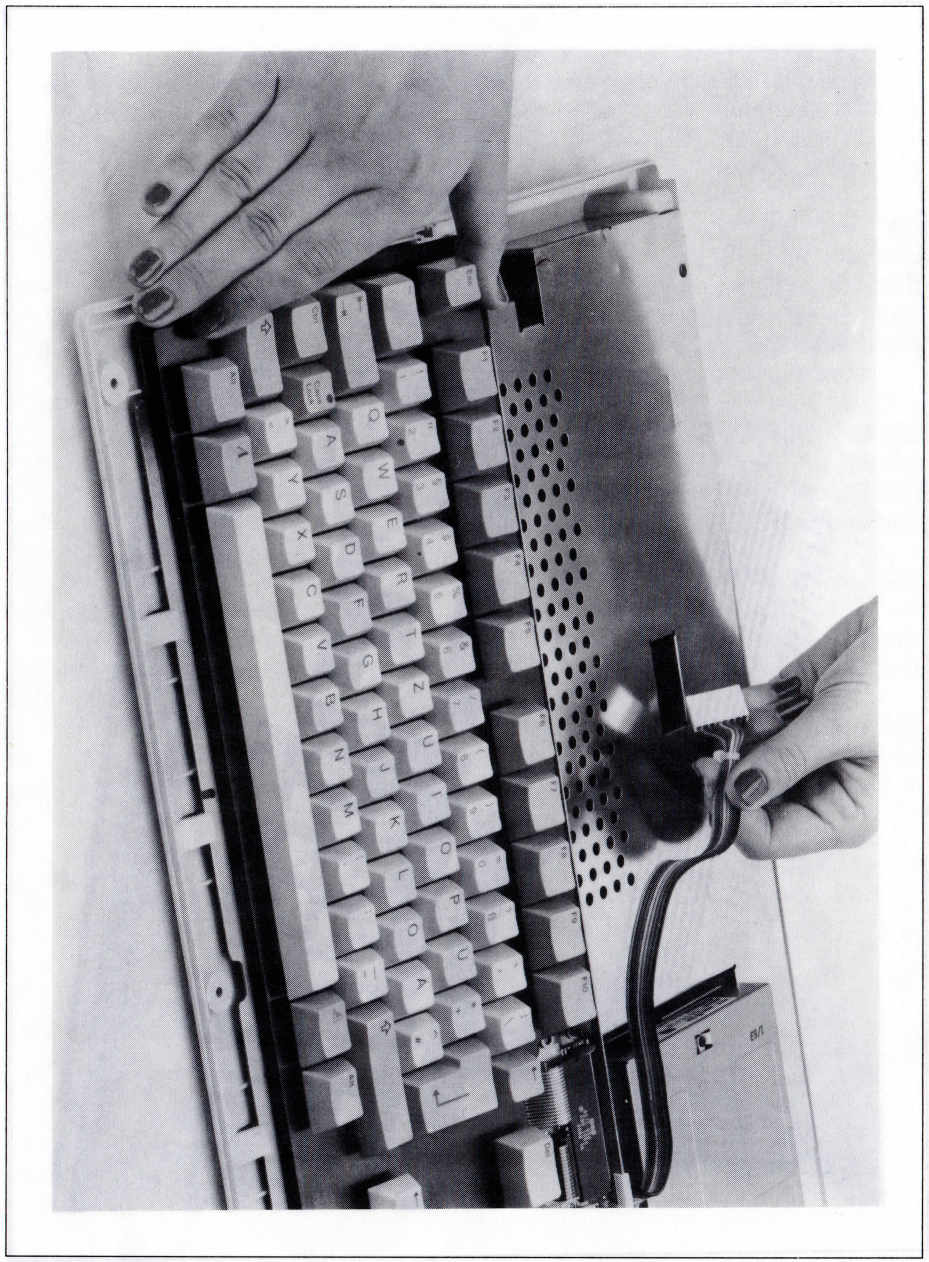
(6) Are all the pins from the 68000 CPU fitted into the 64 pin socket on the ATonce-Plus emulator PCB (none bent inward or outward) ?



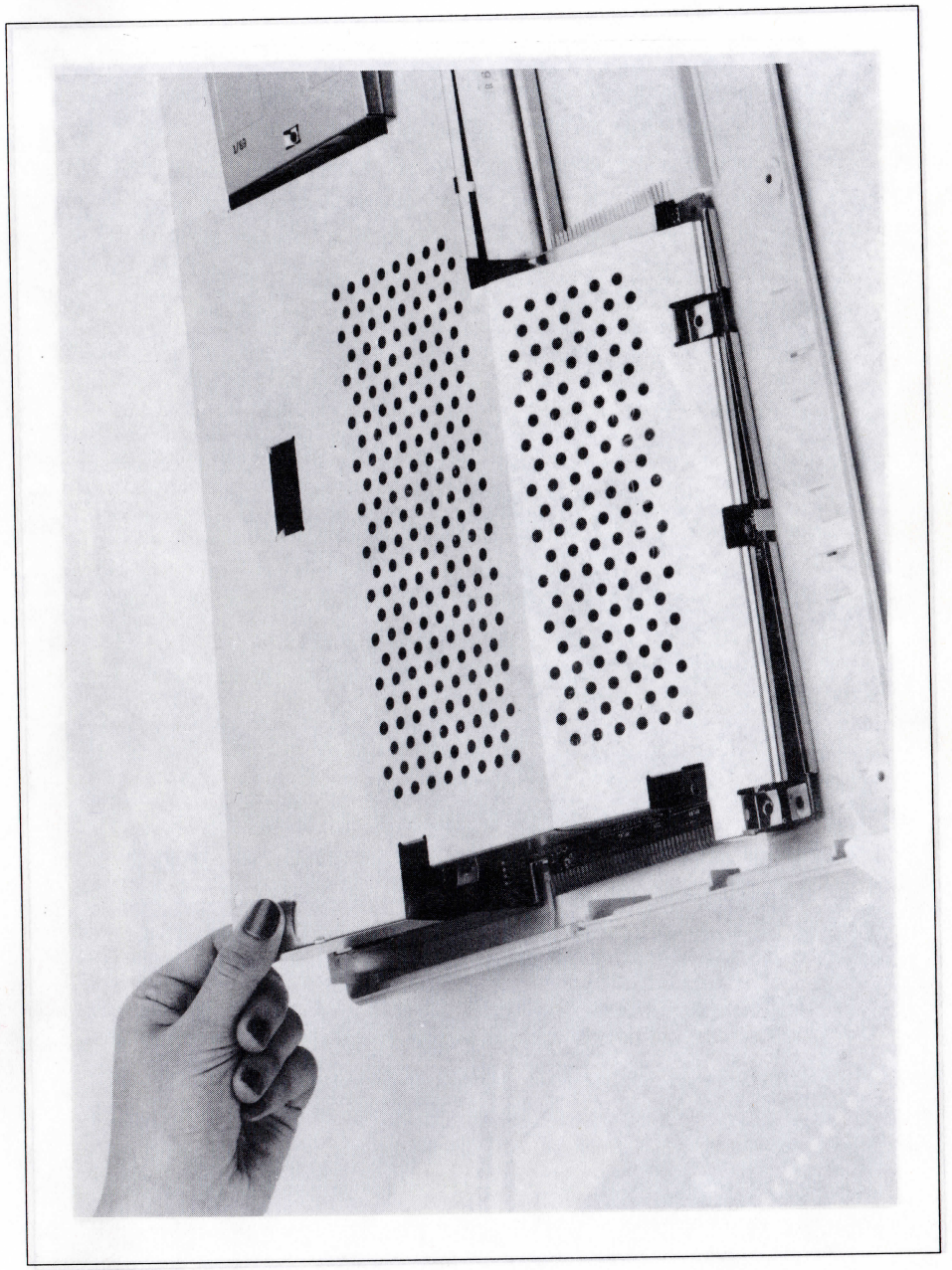
Picture 2.3.a



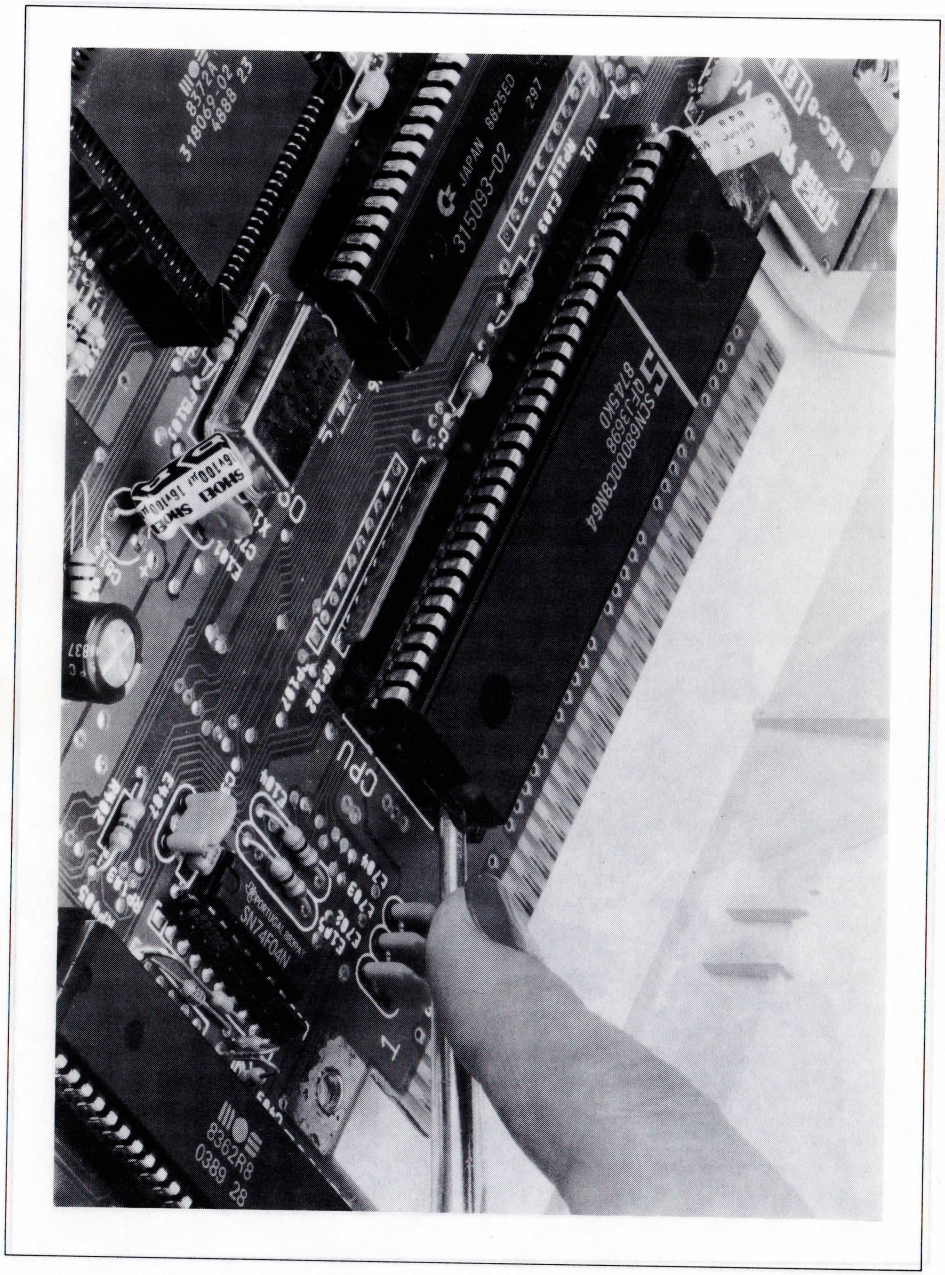
Picture 2.3.b



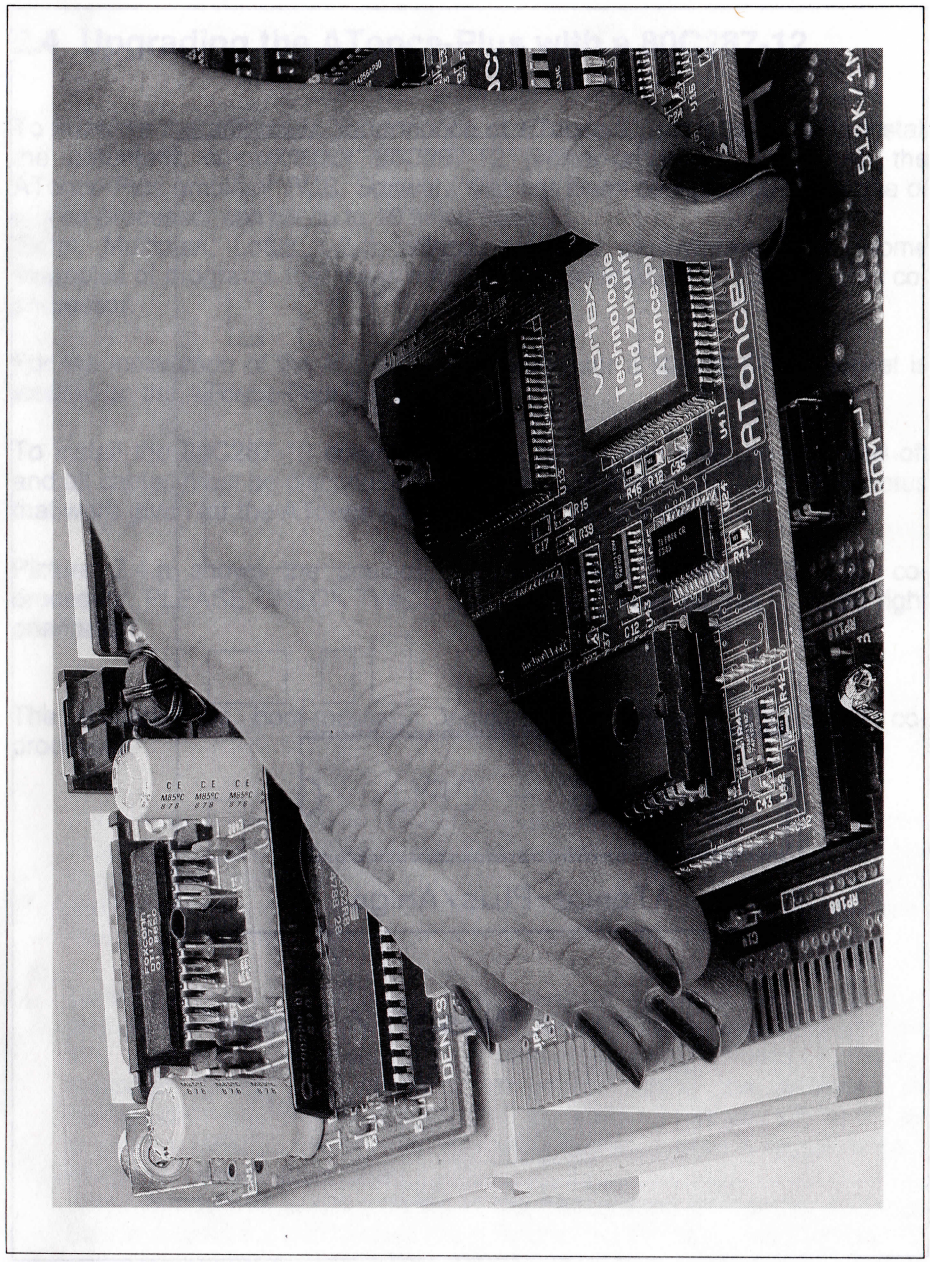
Picture 2.3.c



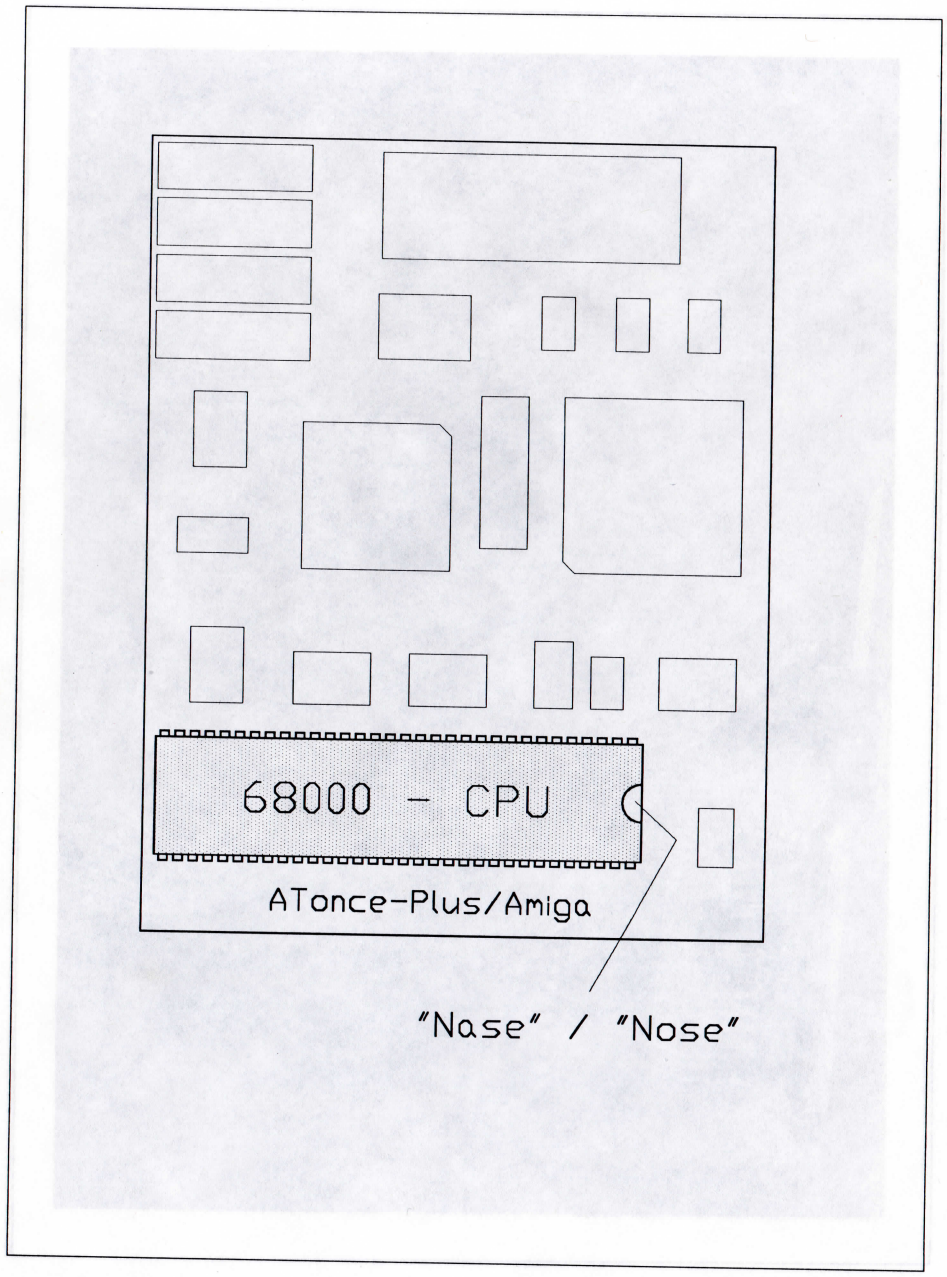
Picture 2.3.d



Picture 2.3.e



Picture 2.3.f



Picture 2.3.g

2.4 Upgrading the ATonce-Plus with a 80C287-12

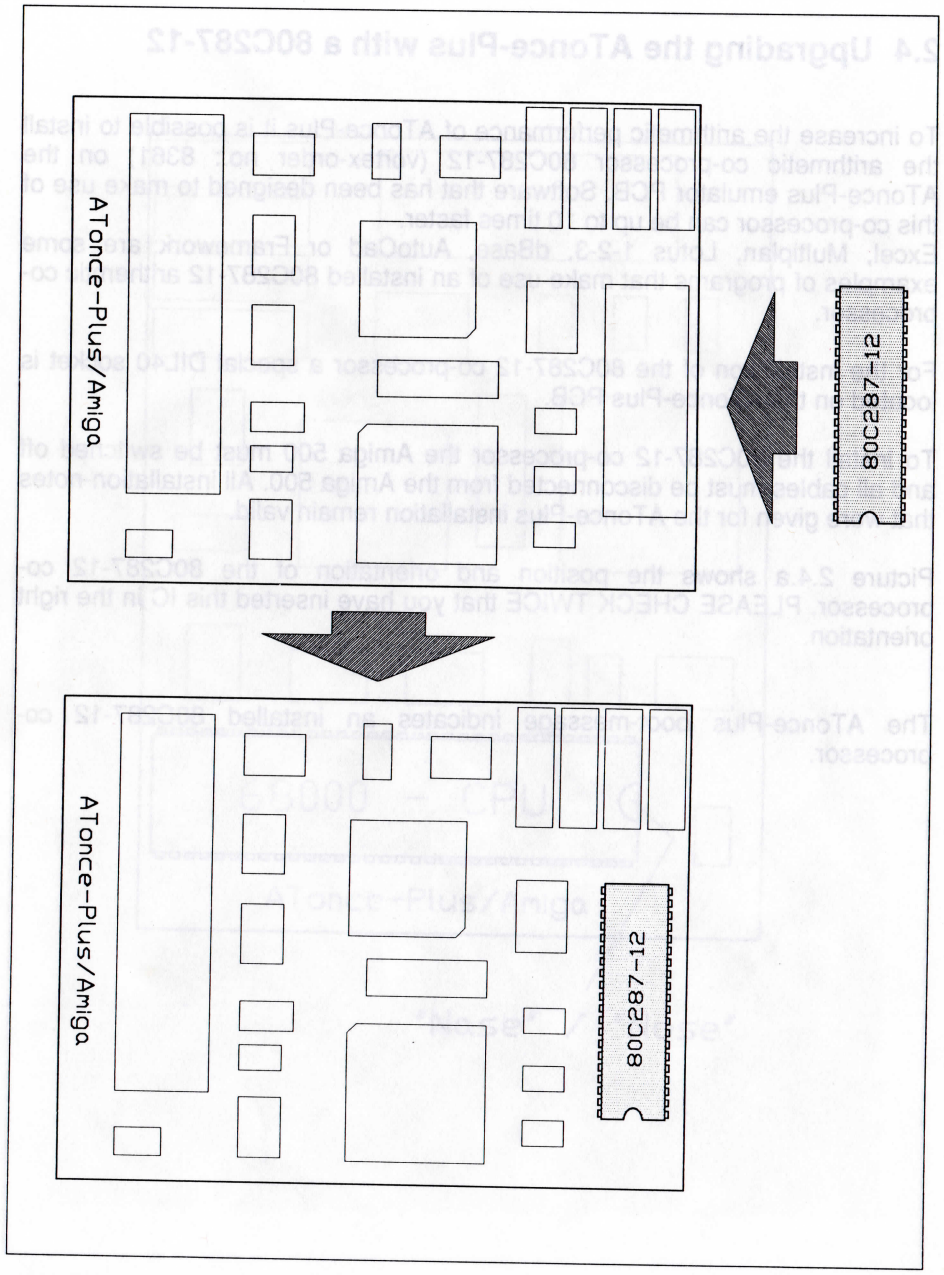
To increase the arithmetic performance of ATonce-Plus it is possible to install the arithmetic co-processor 80C287-12 (vortex-order no.: 8361) on the ATonce-Plus emulator PCB. Software that has been designed to make use of this co-processor can be up to 10 times faster.
Excel, Multiplan, Lotus 1-2-3, dBase, AutoCad or Framework are some examples of programs that make use of an installed 80C287-12 arithemtic co-processor.

For the installation of the 80C287-12 co-processor a special DIL40 socket is located on the ATonce-Plus PCB.

To install the 80C287-12 co-processor the Amiga 500 must be switched off and all cables must be disconnected from the Amiga 500. All installation-notes that were given for the ATonce-Plus installation remain valid.

Picture 2.4.a shows the position and orientation of the 80C287-12 co-processor. PLEASE CHECK TWICE that you have inserted this IC in the right orientation.

The ATonce-Plus boot-message indicates an installed 80C287-12 co-processor.



Picture 2.4.a

3. The Operation of ATonce-Plus

3.1 Which MSDOS is needed ?

We recommend the use of MSDOS versions of 3.2 or higher (mainly due to the support of 80 track disks). If the MSDOS version 4.01 is to be used please note that the 80286 variation of this operating system is available.
A 3.5" MSDOS system disk in 80 track Format with 720KB is needed. If an external 5.25" Floppy disk drive is available, a 5.25" 360KB MSDOS system disk can also be used.

3.2 First time operation of ATonce-Plus

1. Insert a copy of the ATonce-Plus "System-Disk" into floppy drive DF0: and switch on your Amiga 500 or make a reset (left Amiga-key + right Amiga-key + CTRL-key).

2. Please pay high attention to the contents of the README-file which will be automatically displayed. If you have a printer attached to your Amiga 500 you can also print out the contents of this file.

3. Now, as usual the Workbench will appear with the ATONCE System-Disk icon. Double click on this icon and afterwards also on the AT-EMULATOR icon.

4. If you have a hard disk connected to your Amiga 500, you should use now HDINSTALL to copy all relevant files from the copy of the ATonce-Plus System-Disk into a selectable partition of your hard disk (do not use a partition which you want to use later for MSDOS). Eject now the ATonce-Plus System-Disk.

5. To start ATonce-Plus with the factory-settings of vortex, please double click on the ATONCE icon in the AT-EMULATOR drawer. After a short time your Amiga will make a reset and display the ATonce-Plus boot-message (giving you additional information about the ATonce-Plus configuration e.g. memory-assignment, ports etc.). Then you will be asked to insert a MSDOS system disk into MSDOS floppy drive A (which is your Amiga 500 floppy drive DF0:).
   Since AmigaDOS is still working in the background (remember ATonce-Plus is a task) it still accesses the ATonce-Plus System-Disk disk in DF0: or the boot-partition of your hard disk drive.

If ATonce-Plus was loaded from floppy disk, you have to wait with the insertion of the MSDOS system disk, until AmigaDOS has stopped accessing the ATonce-Plus System-Disk in drive DF0: . Alternatively to this there is a method to deliberately terminate the AmigaDOS access. Press the *left Amiga-key + N* to switch to the AmigaDOS-screen, then press the *left mouse-button* in order to make the mouse-pointer visible on the AmigaDOS-screen, finally press *CTRL D* to terminate the access of AmigaDOS to the floppy drive or the hard disk.
If you have decided on this alternative press now the *left Amiga-key + M* in order to switch back to the MSDOS-screen and again the *left mouse-button* to switch the mouse and the keyboard back to MSDOS.

Insert the MSDOS system disk into floppy drive DF0: and press any key. MSDOS will be booted now.

After MSDOS has been booted it will come up with the MSDOS system-prompt "A>" and ATonce-Plus is in operation.

The original vortex factory settings are:

- One 3.5" MSDOS floppy drive (= internal Amiga 500 DF0:) which is the MSDOS drive "A"; AmigaDOS disk-change-recognition under MSDOS is disabled.
- No hard disk installed.
- Hercules-text (2 colours, 8*8 font) video-emulation.
- The size of the MSDOS base-memory is 640KB.
- The size of Extended/Expanded memory is 0KB.
- The Amiga mouse is a serial Microsoft mouse (together with a serial Microsoft-compatible driver, e.g. MOUSE.SYS) emulated on COM1.
- Serial interface is COM2.
- Parallel interface is LPT1.

All these settings can be changed with the ATonce-Plus installation-software INSTALL which is described in the next chapter.

Notes:

(1) Changing disks under MSDOS. Since ATonce-Plus fully runs as a task within the Amiga multitasking environment, a disk-change under MSDOS will also be recognized by AmigaDOS. To avoid that you have to wait after a disk-change under MSDOS until AmigaDOS has recognized this disk-change (floppy drive LED will be selected), it is possible to disable this disk-change-recognition (factory setting of the ATonce-Plus emulator software: disk-change-recognition is disabled).
Naturally as soon as you switch to the AmigaDOS-screen, the floppy drive LED goes on and AmigaDOS recognizes the disk(s) in the floppy drive(s).
Under MSDOS the key combination *Left Amiga-key + "2" in the numeric block* allows the user to enable or disbale the disk-change-recognition of AmigaDOS under MSDOS.

(2) Skipping the memory test. The memory test at the start of ATonce-Plus can be skipped by pressing the *ESC-key*.

(3) The well known "Three-Finger-Grip". As with PC/AT computer systems a MSDOS reset can be made using the *Control + Alternate + Delete* key combination.

(4) Switching between AmigaDOS and MSDOS. With the key combination *left Amiga-key + N* respectively *left Amiga-key + M* you can switch between the AmigaDOS- and the MSDOS-screen.
If the AmigaDOS mouse-pointer appears on MSDOS-screen, this indicates that the mouse and keyboard is switched to the AmigaDOS-side. If you press the left mouse-button the AmigaDOS mouse-pointer disappears and the mouse as well as the keyboard are switched to the MSDOS-side.

3.3 The ATonce-Plus Installation-Software INSTALL

To use ATonce-Plus with the existing components of the Amiga computer system (e.g. RAM expansion, hard disk drive, external floppy etc.), it has to be configured. This is done by using the INSTALL program on the ATonce-Plus System-Disk.
INSTALL is started using CLI or the Workbench and allows the setting of all operating parameters. INSTALL is a program based on a graphic user interface and is self explanatory. The HELP gadget gives on-line help during a session with INSTALL.

The installation program consists of the following files:

INSTALL	-	main program
INSxGER.RCT	-	German overlay (x=0,1)
INSxGBR.RCT	-	English overlay (x=0,1)
RCT.LIBRARY	-	Overlay-Library (must be copied into the LIBS directory)
INSTALL.INFO	-	Icon info file for the Workbench

Important note: all files - except the RCT.LIBRARAY - must be in the same directory which contains the ATonce-Plus emulator-software.
If you have copied your ATonce-Plus System-Disk to your hard disk drive by means of HDINSTALL (in the AT-EMULATOR drawer), all files have been copied automatically into their right destination directory/drawer.

To start INSTALL from the CLI you have to change to the AT-EMULATOR directory. Then type

INSTALL<ENTER>

To start INSTALL from the Workbench double click on the INSTALL icon which is inside the AT-EMULATOR drawer.

After INSTALL is loaded the screen is cleared. If you press now the right mouse button the following menu line will be displayed:

INFO	DISK	Options	Mode	Country

It is possible that you first have to change the language to English through the menu option "Country".

In all sub-menus the following gadgets have the same meaning:

Help:	Online-Help.
Reset:	Reset the parameters to the values that were set when this sub-menu was entered.
Default:	Set the parameters to default values.
OK:	Save the selected parameters.
Quit:	Close the sub-menu without saving the selected parameters.

If you click on the various menu entries, you will find the following information:

INFO Version-number of this INSTALL program.

DISK By clicking on QUIT the installation program INSTALL will be terminated. If you have changed parameters a requester will appear and ask you if these new parameters should be saved in the ATonce-Plus configuration file ATONCE.CFG.

OPTIONS

Keyboard

- Keyboard-Type: Select between German or ASCII keyboard.
- Repeat-Rate: Adjust the repeat-rate of the keyboard.
  Slider
  to the left = reduce repeat-rate
  to the right = increase repeat-rate.
- Delay-Rate: Adjust the delay-rate of the keyboard.
  Slider
  to the left = delay-time short
  to the right = delay-time long.

In order to get all keys at the same position as used under AmigaDOS, you have to select "ASCII". A MSDOS keyboard-driver (e.g. KEYBOARD.SYS) is normally not needed.

Floppy

Select which Amiga floppy drives (DF0:, DF1:, DF2: or DF3:) will be assigned to the MSDOS floppy drives A and B.

Select if you use 40 or 80 track floppy drives.

Note: The Amiga 500 does not allow the operation of MSDOS high density disks (5.25"/1.2MB or 3.5"/1.44MB). In spite of this restriction, the ATonce-Plus emulator BIOS already contains all relevant functions to handle high density disks. As soon as a usable HD-floppy-kit is available, we will makes an adaptation of the emulator BIOS and release an update (= new ATonce-Plus System-Disk).

Harddisk

There are two different methods to use the hard disk under MSDOS:

A. direct assignment of up to 24 MSDOS partitions (C, D,.., Y, Z) to the physically existing AmigaDOS partitions (insert in the selected input field the AmigaDOS device-name; e.g. DH0 or DH1 etc., leave the colon ":")

and/or (both methods can be used simultaneously)

B. assignment of up to 24 MSDOS partitions (C, D, ..., Y, Z) to a special file (from now on we call it *dosfile*) in an AmigaDOS partition.
Insert in the selected input field the path, the filename and the partition-size - defined by the logical start- and end-cylinder; each cylinder has a capacity of 8*27*512 Bytes = 110.592 Bytes (approximately 108KB). E.g. DH0:SUBDIR1/DOSFILE,0,100 .

Select wether you want to boot MSDOS from floppy or from hard disk. If you have selected floppy-boot, every time when ATonce-Plus is loaded it will ask you to insert a MSDOS system disk into drive A.

The device-names or the definition of the *dosfile* have to be inserted in the input fields of the logical MSDOS drives.
When you leave this menu by clicking on the OK gadget, INSTALL checks if the selected device-names are assigned to mounted drives. If not, the text-cursor will be positioned in the input field where the wrong device-name is located.
If you have assigned one or several partitions to a *dosfile*, this file will be automatically generated when you click on the OK gadget (this may take up to several minutes, depending on the size of the included partition(s)).

Always keep in mind that AmigaDOS partitions which are directly assigned to MSDOS partitions (method A) can never be used under AmigaDOS. Therefore save all relevant data before you start to install the hard disk under MSDOS.

If you have assigned one or several MSDOS partitions to the *dosfile*, this file must not be used under AmigaDOS (except with a good back-up software).

The MSDOS boot partition must be equal or larger than 8MB (which is a particularity of MSDOS and not of ATonce-Plus).

Graphics-adapter

- Selection of the emulated Graphics-adapter. CGA, Hercules, Olivetti, Toshiba T3100, EGA- and VGA-monochrome graphics.

- Selection of the number of colours in CGA text mode 80*25; 16, 8 or 4.

Since ATonce-Plus uses the same RAM as the 68000 CPU and the custom-chips, it is possible that with video-emulations which use more than 2 bit-planes (which means more than 4 colours) the video-output performance of ATonce-Plus is reduced (the reason is that the Blitter, has a higher bus-priority). To prevent this effect which occurs mostly in the CGA text modes it is possible to limit the number of bit-planes:

CGA 80*25 - 16 COLORS --> 4 BIT-PLANES
CGA 80*25 - 8 COLORS --> 3 BIT-PLANES
CGA 80*25 - 4 COLORS --> 2 BIT-PLANES

- Selection of the Hercules text-fonts: H(high), L(low), H&L. (H = high intensity font; L = low intensity font)

- Selection of the screen : INVERS or NOT-INVERS. Enable or disable the blinking-attribute.

NOTE: the fastest text output is achieved with:

Video-emulation	colours	Selection under MSDOS
CGA 80*25	4	CGA 4<ENTER>
OLIVETTI 80*25	4	V400 4<ENTER>
HERCULES 80*25	2	MDA 8<ENTER>
VGA/EGA 80*25	2	VGA 4<ENTER> and EGA 4<ENTER>

You can find the programs CGA.EXE, V400.EXE, MDA.EXE, EGA.EXE and VGA.EXE on the ATonce-Plus DOS-Utility-Disk. Naturally all these settings can be made with the INSTALL program. They will be automatically used when ATonce-Plus and MSDOS is bootet.

Memory
Mouse
RS232
LPT1

Selection of the size of the Base-, Extended- and Expanded memory:

< > : in steps of one
<< >> : in steps of 10, 100 or 1000 (step-width can be adjusted by clicking on the step gadget).

Selection of the Mouse-port: COM1 or COM2. The other port is occupied by the RS232 interface (if active).

Enable or disable the RS232 interface.

Selection of the parallel LPT1 interface. LPT1 on ports $378, $278 or disabled.

Note: if the RS232 interface is enabled and ATonce-Plus is running it will be exclusively used by MSDOS. In that case an access from AmigaDOS is not possible.

*Colours Text 16 40*25*

This emulation is valid for CGA, Olivetti and T3100. Change the colours - if needed - with the R(red), G(green) and B(blue) sliders.

*Colours Text 16 80*25*

This emulation is valid for CGA, Olivetti and T3100. Change the colours - if needed - with the R(red), G(green) and B(blue) sliders.

*Colours Text 8 80*25*

This emulation is valid for CGA, Olivetti and T3100. Change the colours - if needed - with the R(red), G(green) and B(blue) sliders. Assignment of the DOS-colours 0 .. 15 to the available colours.

*Colours Text 4 80*25*

This emulation is valid for CGA, Olivetti and T3100. Change the colours - if needed - with the R(red), G(green) and B(blue) sliders. Assignment of the DOS-colours 0 .. 15 to the available 4 colours.

Colours Graphics

Selection of 3 colours for the CGA LoRes palettes 1 and 2. Selection of the foreground and background colours for CGA HiRes, Hercules-Graphics, EGA- and VGA-monochrome graphics, T3100 and Olivetti HiRes. Change the colours with the R(red), G(green) and B(blue) sliders.

Notes: you should always be aware that the wrong colour-assignment (e.g. foreground = background) can lead to an "invisible" or "unreadable" screenplay.

The OLIVETTI and the T3100 graphics adapters have in addition to the full CGA compatibility a hires graphics-mode (640*400) with two colours.

Mode

Selection of the vortex emulator product. ATonce-Plus (16MHz, 512KB FAST-RAM) or ATonce (7.2MHz). The default setting is "ATonce-Plus".

COUNTRY

Selection of the country-language that is used for INSTALL and all messages of the emulator software. If you want to change the language INSTALL needs a few seconds to setup all language-files.

Important information for the installation of a new ATonce-Plus software-update:

All settings that have been made with INSTALL.PRG are stored in the configuration-file ATONCE.CFG.
If you receive a new ATonce-Plus software-version you have to save your ATONCE.CFG file. After you have copied the new software into your working directory, simply copy the previously saved ATONCE.CFG file also into this directory. When you load the new emulator-program it will use all parameters you have saved in ATONCE.CFG.

3.4 Using the hard disk under MSDOS "Step by Step" installation

The ATonce-Plus Emulator administers up to 24 MSDOS partitions. What you need is a Commodore-compatible hard disk subsystem (e.g. Commodore A590 or GVP Series II HD8).

There are two methods to use the hard disk under MSDOS:

A. Direct assignment of one or several AmigaDOS partitions to MSDOS partitions.

and/or

B. Assignment of one or several MSDOS partitions to a special file (the *dosfile*) in an AmigaDOS partition.

Using **method A** means that the access to the harddisk is as fast as possible, but the partitions can not be used under AmigaDOS. These partitions are NOT AmigaDOS compatible. If you want to use already existing AmigaDOS partitions for MSDOS, make sure that all data on these partitions are SAVED before you start the installation. If you do not take care here ALL DATA OF THESE AMIGADOS PARTITIONS WILL BE LOST IRRETRIEVABLY !

Method B has the advantage that you do not "loose" partitions for MSDOS, but the access time to the data is reduced a little (FileSystem-overhead).

The installation of the hard disk under MSDOS is as follows:

1. Choose or generate under AmigaDOS the partitions you want to use under MSDOS.

2. Start the ATonce-Plus installation program INSTALL and invoke the sub-menu Harddisk. Select the **floppy drive as the boot-drive**.

   Enter the device-names of the chosen AmigaDOS partitions (**method A**) or the path and filename of the *dosfile* that shall contain the MSDOS-partitions (**method B**).
   Note: If you have decided for **method A**, do not assign your AmigaDOS boot-partition (DH0) to an MSDOS partition. If the partition where you have installed the ATonce-Plus software (with HDINSTALL) is different from your AmigaDOS boot-partition the same applies also to this partition.

   The input format for **method A** is:

   DRIVE

   It is important to leave the colon after the device-name: e.g. DH0 and not DH0: .

   The input format when using **method B** is:

   DRIVE:/SUBDIR1/../SUBDIRn/FILENAME,STARTCYL,ENDCYL

DRIVE:	AmigaDOS partition, e.g. DH0, DH1 .. .
SUBDIRn:	Name of subdirectory.
FILENAME:	Name of the *dosfile* that shall contain the MSDOS-partitions.
START-CYLINDER:	the selected MSDOS partition starts at this logical cylinder.
ENDCYLINDER:	the selected MSDOS partition ends at this logical cylinder.

   (One cylinder equals 110.592 Bytes which is approximately 108KB.)

   Example for **method A**: you want to use 3 partitions under MSDOS and you have 6 partitions available under AmigaDOS: DH0, DH1, DH2, DH3, DH4 and DH5. You want to use DH1 as MSDOS-partition C, DH3 as MSDOS-partition D and DH4 as MSDOS partition E. Simply enter DH1 into the input field of MSDOS partition C, DH3 into the input field of MSDOS partition D and finally DH4 into the input field of MSDOS partition E.

Example for **method B**: you have decided for 3 MSDOS partitions C, D, E and for **method B**.
Enter "DH0:DOSFILE,1,100" into the input field of MSDOS partition C. This partition has a size of approximately 10MB.
Enter "DH0:DOSFILE,101,151" into the input field of MSDOS partition D. This partition has a size of approximately 5MB.
Enter "DH0:DOSFILE,152,202" into the input field of MSDOS partition E. This partition has a size of approximately 5MB.

Save all settings by clicking on the OK gadget.

3. Start ATonce-Plus and boot MSDOS from a MSDOS system disk.

4. Use FDISK to initialize the partitions C and D (D only when assigned with INSTALL). To use FDISK for partition D simply use the FDISK menu-point 5 "select next drive".
Answer all questions of FDISK with <ENTER>.

5. After finishing FDISK a system reset is performed and MSDOS will be booted again from floppy disk.

6. Now use the MSDOS FORMAT-command to format partition C.
Type in: A>FORMAT C:/S<ENTER>
the parameter "/S" transfers the MSDOS operating system files to the hard disk.

7. Use FORMAT again to format partition D. Do not use the "/S" parameter here.
Type in: A>FORMAT D:<ENTER>.
Use now the vortex formatter PFORMAT (on the DOS-Utility-Disk) to format all further partitions (E, F, etc.).
This formatter is started with: A>PFORMAT E:<ENTER>.

8. Copy now the contents of your MSDOS system disk and ATonce-Plus DOS-Utility-Disk into MSDOS partition C. A>COPY *.* C:<ENTER> .
In order to be able to use the partitions E, F, etc. insert into the CONFIG.SYS file the following line:
DEVICE=HDT.SYS
(HDT.SYS is on the DOS-Utility-Disk and has to be copied into MSDOS partition C.)

9. Switch off the A500 and wait a 30 seconds. Switch it on again.

10. Use again the ATonce-Plus INSTALL installation-program to change the boot-priority to hard disk boot.

Notes:

(1) Using Hard Disks which cannot autoboot under AmigaDOS. This kind of hard disks need a special boot-disk. This boot-disk has to remain in the floppy drive DF0: when ATonce-Plus is loaded.

(2) "extended partition" using MSDOS version equal or larger than 3.3 .
One of the major differences between older MSDOS versions and MSDOS version 3.3 or higher is, that FDISK allows the installation of more partitions than C and D. This is done by means of the "extended partition" without having to assign the partitions E, F, etc. with the ATonce-Plus installation program INSTALL to AmigaDOS partitions or a *dosfile* (for detailed information about the extended partition and the general partition handling of MSDOS please refer to relevant Microsoft literature).
If you decide to install the partitions E, F etc. with this method, do not assign partitions other than C and D with INSTALL to AmigaDOS partitions or to the *dosfile*. The size of the AmigaDOS partition or the *dosfile* that is assigned to the MSDOS partition that includes the extended partition, will be the total of the sizes of all included partitions.
After using FDISK the partitions E, F, etc. have to be formatted with FORMAT. HDT.SYS is not needed to access E, F, etc. .

(3) Method A and Method B can be used simultaneously.
Example: MSDOS has the partitions C, D, E and F. C and E are directly assigned to DH1 and DH2, whereas D and F are assigned to *dosfile* TEST123, which is a file in the AmigaDOS partition DH0 .

3.5 The ATonce-Plus Emulation-Software

The emulation-software consists of the following files:

ATONCE	main program
ATONCE.CFG	configuration-file (can be changed with INSTALL)
ATONCE.BIN	Overlay-file
ATONCE.DSG	Overlay-file
ATPLUS.DSG	Overlay-file
ATONCE.INFO	Icon info-file for the Workbench

Important note: all files must be in the same directory.
If you have copied your ATonce-Plus System-Disk to your hard disk drive by means of HDINSTALL (in the AT-EMULATOR drawer), all files have been copied automatically into their right destination directory/drawer.

To start ATonce-Plus from the CLI/SHELL change to the AT-EMULATOR directory and type ATONCE<ENTER>.
To start ATonce-Plus from the Workbench double click on the ATONCE Icon in the AT-EMULATOR drawer.

When ATonce-Plus is started the emulation-software automatically detects the memory-configuration and initializes ATonce-Plus with the configuration found.

ATonce-Plus boot-message:

```
ATONCE-PLUS 80286-Emulator for Amiga - (C) 1990-91 vortex Computersysteme GmbH

CPU-80286    : 16MHz      COM1    : MS Mouse    BIOS Version: 2.00
NPU-80287    : installed  COM2    : RS232       MEMMODE  : NTSC/M8-22
FAST-RAM     : installed  LPT1    : Centronics  Emulator : ATonce-Plus
BASE MEMORY  : 640KB
EXT. MEMORY  : 1024KB     VIDEO:  : VGAmono     (C) Copyright 1991 by
EXP. MEMORY  : -                                vortex Computersysteme GmbH
```


The different entries have the following meaning:

CPU-80286:	**16MHz** for ATonce-Plus **7.2MHz** for ATonce (predecessor product).
NPU-80287:	**installed**, if the 80C287 co-processor is installed (not available with ATonce).
FAST-RAM:	**installed**, indicates 512KB vortex FAST-RAM (not available with ATonce).
BASE MEMORY:	**640KB** (standard value, can be reduced with INSTALL).
EXT. MEMORY:	Available Extended Memory. Size according to the installed RAM in the Amiga 500 and the settings in INSTALL.
EXP. MEMORY:	Available Expanded Memory. Size according to the installed RAM in the Amiga 500 and the settings in INSTALL.
COM1:	**MS Mouse**. The Amiga mouse becomes with an installed standard Microsoft mouse-driver (mouse.sys) a serial Microsoft mouse.
COM2:	**RS232**. Standard RS-interface.
LPT1:	**Centronics**. Standard Centronics-interface.
VIDEO:	**VGAmono**. Pre-selected video-emulation (here VGA-monochrome graphics).
BIOS Version:	**2.0** . Version-number of the emulator BIOS.
MEMMODE:	**PAL** or **NTSC**.
Emulator:	**ATonce-Plus**: 16MHz, FAST-RAM **ATonce**: 7.2 MHz, no FAST-RAM.

3.5.1 ATonce-Plus with internal/external Memory expansions

If you want to use an internal and/or external RAM expansion with your Amiga 500 (connected to the expansion bus and/or plugged into the trap-door expansion slot), you have to make sure that the RAM works really properly.
Most manufacturers of RAM expansion give their customers a program that allows them to check wether the RAM works fine or not.
Who relies on the Workbench RAM-message or the AVAIL command, has to expect that data can be corrupt or completely destroyed.
ATonce-Plus should only be operated, when it is 100% sure that the RAM works properly.

In addition to the standard 640KB MSDOS base memory, ATonce-Plus can utilize up to 6MB Extended and/or Expanded memory (which is much more than a typical PC/AT can have on its motherboard). ATonce-Plus can use for this memory the Amiga 500 RAM which is above the first megabyte. This is the RAM of internal or external RAM expansions.
Examples for external RAM expansions are: Commodore A590 (hard disk with integrated 2MB RAM expansion, GVP Series II-HD+ (hard disk with integrated 8MB RAM expansion).
Examples for internal RAM expansion are: Commodore A501 (512KB), ICD AdRAM 540 (1.8MB).

3.5.2 Operating Microsoft WINDOWS 3.0

Windows 3.0 is the new graphical user interface for PC/AT computer systems. Different to the older versions Windows 3.0 uses Extended memory as real work memory. The 80286 micro-processor is run in Protected or Standard Mode. In an Amiga that has for example 5MB RAM installed, and depending on the configuration (using INSTALL), up to 4MB extra work memory is available. The memory in this case is not used as data memory (as a RAM disk), but as real program memory, so in this memory all programs can be run.

To use Windows 3.0 and the ATonce-Plus in Standard Mode the following is needed:

1. An Amiga 500 with more than 1MB RAM and a hard disk drive is required; e.g. Amiga 500 with an A501 installed and an A590 connected to expansion bus. Windows 3.0 needs approx. 10MB free hard disk space.

2. Using the INSTALL program the size of the Extended memory must be set.

3. The Windows set-up program automatically inserts the HIMEM.SYS driver in the DOS configuration file CONFIG.SYS.

Note: If you want to change the CONFIG.SYS make sure the HIMEM.SYS driver is used which is delivered with Windows 3.0 (in September 1990 it has the version number 2.60).

4. When installing Windows 3.0 using the Set-up program the following video-adapter can be chosen, "VGA-monochrome" (640*480).

5. Before Windows 3.0 is started, make sure the program VGA is started. (This small program switches on the VGA-monochrome video-emulation, it can be found on the ATonce-Plus DOS-Utility Disk). Alternatively the VGA-monochrome video-emulation can be set with INSTALL as the default video-emulation .

6. WIN<ENTER> starts Windows 3.0 in Standard-Mode. By choosing the Help menu in the Program-Manager and by further choosing the menu item "Info about Program-Manager" the amount of memory available and that windows runs in standard mode can be seen.

7. WIN /R<ENTER> starts Windows 3.0 in Real-Mode. The extended options of the AT (e.g. Extended memory) cannot be used in this mode.

Notes:

Certain programs cannot run together with Windows 3.0 in Standard Mode, e.g. EXCEL 2.01 or WORD 5.0. To use these programs with the Extended memory updates from Microsoft are required. They are normally well priced (after sending in the original disks). If you can live without the updates then use these programs in Real mode, so start Windows 3.0 with WIN /R.

If you operate an Amiga 500 with NTSC video-interface, we recommend to install the "OLIVETTI AT&T PVC-display" (640*400) instead of the "VGA-monochrome" display. The reason is that with the NTSC video-interface the VGA-monochrome screen with its 640*480 resolution does not fit completely into your Amiga-screen (you would have to scroll it up and down with special key combinations described in chapter 3.8).
If you have decided to use the OLIVETTI emulation, in step 5 of the above described Windows installation, "V400" substitutes "VGA".

3.5.3 Using a RAM-Disk with RAMDRIVE.SYS

To install a RAM-Disk using RAMDRIVE.SYS the following command must be entered into the CONFIG.SYS file (using for example the MSDOS editor EDLIN):

DEVICE=RAMDRIVE.SYS xxxx /e

Also the Microsoft RAM-Disk driver must be copied from the MSDOS system disk onto the hard disk C.
xxxx is the size of the RAM-Disk; e.g. 3072 for 3MB (this 3MB must of course be installed and reserved as Extended memory using the INSTALL program).
Note:
The RAM-Disk **loses its contents** as soon as the computer is either switched off or it is reset using the CTRL/ALT/DEL keys !

3.5.4 Expanded Memory

To install Expanded memory the file EMM.SYS which can be found on the ATonce-Plus System-Disk can be used. The following command must be entered into the CONFIG.SYS file. (using for example the DOS editor EDLIN):

DEVICE=EMM.SYS

Also the EMM.SYS driver must be copied from the DOS-Utility Disk onto the hard disk partition C. After ATonce-Plus/MSDOS is booted the Expanded memory is installed according to the settings used in the INSTALL program. (EMM.SYS does not support the LIM 4.0 Standard. If you need Expanded memory according to LIM 4.0 you need an LIM4.0-emulator such as *Turbo-EMS of Merrill & Bryan*).

3.5.5 Not enough memory ...

Every mounted partition needs RAM, some need more some less. ATonce-Plus reserves all its working RAM during start-up long before the hard disk partitions are mounted. Therefore it is possible that the whole machine hangs up without any displaying an error-message, because there is not enough memory left to mount the hard disk partitions. There are 3 ways around this:

- upgrade your machine with more memory
- reduce the number/size of the hard disk partitions
- reduce the size of MSDOS base-memory (to 512KB)

3.6 Supported Floppy Disk Drives and their Formats

With MSDOS version equal or larger than 3.2, the ATonce-Plus emulates the following disk formats:

Capacity	Amount of Sides	Amount Tracks/Side	Format
720KB	2	80	3.5"/5.25"
360KB	2	40	3.5"/5.25"
360KB	1	80	3.5"/5.25"

Using the INSTALL program the allocation of the Amiga floppy disk drives DF0:, DF1: etc. in relation to the MSDOS floppy disk drives A and B can be defined (also the external 5.25" floppy disk drive can be defined as MSDOS bootable).

When the ATonce-Plus is loaded the standard floppy format setting is 3.5" with 720KB. If you have selected an external 360KB floppy drive (a 40 track unit) as floppy drive B , you have to use the DRIVPARM command to ensure that if you use the FORMAT command, the disk will be formatted with 360KB (insert in CONFIG.SYS: DRIVPARM=/D:01 /F:00 /S:09).

Note: The Amiga 500 does not allow the operation of MSDOS high density disks (5.25"/1.2MB or 3.5"/1.44MB). In spite of this restriction, the ATonce-Plus emulator BIOS already contains all relevant functions to handle high density disks. As soon as a usable HD-floppy-kit is available, we will make an adaptation of the emulator BIOS and release an update (= new ATonce-Plus System-Disk).

3.7 The Amiga mouse becomes a serial Microsoft Mouse

To install the Amiga mouse as a Microsoft compatible mouse the driver MOUSE.SYS or a compatible driver is needed. The following command must be entered into the CONFIG.SYS file (using for example the MSDOS editor EDLIN):

DEVICE=MOUSE.SYS

Also the MOUSE.SYS driver must be copied from the MSDOS system disk onto the hard disk partition C. After the computer is booted the Microsoft compatible mouse is available.
The question, why is there no mouse driver delivered with the ATonce-Plus, can be simply answered:
Many programs (e.g. WORD 5.5) require their own mouse driver. This driver is delivered with the program. In some cases the mouse driver is already integrated in the main program (e.g. Windows 3.0). ATonce-Plus emulates the original Amiga-Mouse as a serial Microsoft Mouse as either on COM1 or as on COM2. All Mouse drivers, that use a Microsoft serial mouse are automatically compatible. Here we offer the highest degree of compatibility and flexibility.

3.8 Special keys in the Keyboard Definition

ATonce-Plus emulates an 84-key IBM-AT keyboard. The numeric key block on the Amiga keyboard is available in the same definition as when used in AmigaDOS. The following special key combinations are available during the operation of the ATonce-Plus:
(Note: on older A500 keyboards the left Amiga-key can carry the Commodore-logo instead of the Amiga-logo)

Special keys	Function
Left Amiga-key and "0" in the numeric block	Invert screen i.e. invert on (refers to the program INVERS.EXE) Only available in 2-colour mode.
Left Amiga-key and "1" in the numeric block	Scroll Hercules graphic screen to the left *or* Scroll VGA graphic screen up (only NTSC)
Left Amiga-key and "2" in the numeric block	Disk-Change-Recognition of AmigaDOS under MSDOS ENABLED/DISABLED
Left Amiga-key and "3" in the numeric block	Scroll Hercules graphic screen to the right *or* Scroll VGA graphic screen down (only NTSC)
Left Amiga-key and right Amiga-key and "S"	Hardware-Reset of ATonce-Plus
Left Amiga-key and right Amiga-key and "Q"	Remove ATonce-Plus and clear the memory it has used
CTRL-key and ALT-key and DEL-key	MSDOS-Reset
Left Amiga-key and "N" or Left Amiga-key and "M"	Switch between the AmigaDOS- and ATonce-Plus screens
Left Amiga-key and "+" or Left Amiga-key and "-"	Scroll through all available screens forward or backward

3.9 The programs CGA, MDA, V400, EGA, VGA and INVERS

ATonce-Plus supports the following video-emulations:

Emulation-Mode	Type	Colours	Format
CGA-Mode 0	TEXT	16(1)	40*25 characters
CGA-Mode 1	TEXT	16(1)	40*25 characters
CGA-Mode 2	TEXT	16(1)	80*25 characters
CGA-Mode 3	TEXT	16(1)	80*25 characters
CGA-Mode 4	GRAPHICS	4	320*200 pixel
CGA-Mode 5	GRAPHICS	4	320*200 pixel
CGA-Mode 6	GRAPHICS	2	640*200 pixel
MDA	TEXT	2	80*25 characters
Hercules	GRAPHICS	2	720*348 (2) pixel
Toshiba 3100	GRAPHICS	2	640*400 pixel
Olivetti	GRAPHICS	2	640*400 pixel
EGA-monochrome	GRAPHICS	2	640*350 pixel
VGA-monochrome	GRAPHICS	2	640*480 (3) pixel

Notes:

(1) 16 different colours in CGA textmode can be assigned to 4, 8 or 16 MSDOS-colours. The choice over the amount of colours (i.e. the so called Bit-Planes) is also relevant to the video-output performance the ATonce-Plus can produce.

(2) In Hercules-Mode the screen can be scrolled left and right through the 720 pixel resolution by using the "left Amiga-key + 1 in the numeric block" and "left Amiga-key + 3 in the numeric block" keys.

(3) Only important for NTSC operation.
In VGA-monochrome mode the screen can be scrolled up and down through the 480 pixel resolution by using the "left Amiga-key + 1 in the numeric block" and "left Amiga-key + 3 in the numeric block" keys.

3.9.1 Switching the video-emulation under MSDOS

Using the INSTALL program the video-emulation and the colour setting can be set. Independent of these settings the following vortex programs can be used under MSDOS to switch the emulation mode. CGA.EXE (for CGA emulation with 4, 8 and 16 colours), MDA.EXE (for Hercules emulation), EGA.EXE (for EGA-monochrome emulation), VGA.EXE (for VGA-monochrome emulation) and V400.EXE (for T3100/Olivetti emulation).
Using the INVERS.EXE program the screen can be switched between normal and inverse mode.
These programs can be found on the ATonce-Plus DOS-Utility-Disk.
Also after a warm start (pressing the "Control", "Alternate" and "Delete" keys), the configuration set using these programs remains.

MDA.EXE selects the Hercules graphics adapter
CGA.EXE selects the CGA graphics adapter
V400.EXE selects the Olivetti and the Toshiba T3100 graphics adapter
EGA.EXE selects the EGA-monochrome emulation
VGA.EXE selects the VGA-monochrome emulation

Note: When CGA.EXE, EGA.EXE, VGA.EXE and V400.EXE are started the number of colours for the 80*25 text-mode can be selected:

e.g. CGA 4<ENTER>

If you leave out this number, the previously installed number of colours is used.

Command	Function
CGA<ENTER>	selects the CGA adapter with the previously installed number of colours or with the setting that was saved with the INSTALL program.
CGA 4<ENTER>	selects the CGA adapter with 4 colours
CGA 8<ENTER>	selects the CGA adapter with 8 colours
CGA 16<ENTER>	selects the CGA adapter with 16 colours

The same applies to V400.EXE, EGA.EXE and VGA.EXE .

Switching the Hercules emulation:

Command	Function
MDA<ENTER>	selects the Hercules emulation with the previously installed font or with the setting that was saved with the INSTALL program.
MDA 8<ENTER>	selects the Hercules emulation with a 8*8 font (flicker-free)
MDA 16<ENTER>	selects the Hercules emulation with a 8*16 font

Important: The selected graphics adapter and the number of colours are not affected by a DOS-Reset (e.g. CTRL-ALT-DEL).

3.10 The Programs VHIGH, VLOW, SSCR and HSCR

Certain programs synchronize their video memory access to the vertical flyback from the video controller (VBL) to produce a flicker free picture. Here they await a pulse of a certain length from the VBL. As the video-emulation is software-based, it is not possible to produce a "natural" copy of the VBL pulse. The standard configuration is VLOW i.e. a short VBL Pulse. If a program simply hangs after starting it could be that it is in an endless loop waiting for a long VBL pulse. In this case reset the ATonce-Plus and before restarting the program start the VHIGH program. An example of such a program is the editor from Norton utilities NE.COM. VHIGH, if selected, does not stay installed after a system reset. After a reset the video-emulation is once again in VLOW mode.

SSCR.EXE	switch on the Softscroll-function in text-mode (Default)
HSCR.EXE	switch on the Hardscroll-function in text-mode

With enabled Softscroll (soft = smooth) the scroll is performed with the Blitter, whereas with enabled Hardscroll the scroll is managed indirectly by the video-update.

3.11 The Realtime Clock

If there is an Amiga compatible realtime clock available, it becomes an AT-realtime clock under MSDOS through the ATonce-Plus. The setting of the time and date can be carried out using the Workbench program PREFERENCES (see your Amiga user manual).

3.12 File-transfer from MSDOS to AmigaDOS and AmigaDOS to MSDOS

To copy files from an AmigaDOS-partition to a MSDOS-partition and vice versa the DOS-Utility-Disk contains the two small programs P2A.EXE and A2P.EXE:

P2A.EXE PC TO AMIGA: copy a file from a MSDOS-partition into an AmigaDOS-partition

A2P.EXE AMIGA TO PC: copy a file from an AmigaDOS-partition into a MSDOS-partition.

Both utilities are used under MSDOS with the following format:

C>**P2A PCNAME AMIGANAME<ENTER>**
C>**A2P AMIGANAME PCNAME<ENTER>**

The PCNAME is the name of the MSDOS-file. The AMIGANAME is the name of the AmigaDOS-file.

PCNAME: DRIVE:\SUBDIR1\...\SUBDIRn\FILENAME
AMIGANAME: DEVICE:PATH1/.../PATHn/FILENAME

Examples:

PCNAMES: C:\TEST\BIG.TXT or A:FUN.ASC
AMIGANAMES: DH0:ASCFILES/ATONCE/TRANSF.TXT

For the "PCNAME" DRIVE and SUBDIRs can be omitted if the file that should be transferred is located in the same directory as P2A or A2P.
For the "AMIGANAME" always the complete path must be used.
When the transfer is in progress each dot "." stands for 64KB data.
Wildcards are not supported.

3.13 ATonce-Plus Error-Codes

If during the operation of ATonce-Plus an error occurs, the following alert message will be displayed:

ATonce Fatal Loader Error xx
Press any mousebutton

The following error-codes are possible:

Code	Reason	Help/action
0	dos.library cannot be opened	Switch off & restart A500.
1	icon.library cannot be opened	Copy icon.library into LIBS.
2	atonce.cfg cannot be found	Copy atonce.cfg from the System-Disk into the correct directory.
3	atonce.cfg is corrupt/can not be loaded	--"--
4	not enough memory available	Finish other tasks or switch the A500 off and restart the whole system.
5	atonce.dsg or atplus.dsg cannot be found	Copy atonce.dsg or atplus.dsg from the System-Disk into the correct directory.
6,7	error during loading atonce.dsg or atplus.dsg	--"--
8	Hardware-test failure	Switch off & restart A500.
9	not enough memory available	Finish other tasks or switch the A500 off and restart the whole system.

Code	Reason	Help/action
10	atonce.bin cannot be found	Copy atonce.bin from the System-Disk into the correct directory.
11	error during loading atonce.bin	--"--
12	atonce checksum error	Copy atonce from the System-Disk into the correct directory.
13	atonce is already running	There is only one ATonce-task possible.
14	incompatible Memory-model	Try another Memory-model.
15	Floppy DF1: not available	deselect DF1: with INSTALL

Important !

It is in your own interest to fill out this Business Reply Card and return it to us. As part of the vortex User-Service registered users will receive information about product-improvements and software-updates.

If your system disk is defective, it goes without saying that we send you a new one.

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